# A Trio of Science Tricks

*Amaze your family and friends with a trio of tricks. Science is the real magic!*

**Kit contains:**

- 1 sharp pencil
- 1 pipette
- 6 toothpicks
- 1 piece of cardboard

**You will need:** a plate, this zip-top bag, a glass of water, and extra pencils (optional).

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# TRICK #1: THE TOOTHPICK STAR

**Step 1.** Bend 5 toothpicks in half until they snap but are still connected. Don't worry! You have a spare toothpick just in case one breaks apart completely.

**Step 2.** Arrange your toothpicks on your plate as shown.

**Step 3.** Use your pipette to add water, one drop at a time, to center of your toothpick arrangement.

Your toothpicks "magically" form a star. *Ta-da!*

**THE SCIENCE:** The toothpicks are made from wood. When dry wood absorbs water through **capillary action**, the bent wood fibers expand and unbend. As the toothpicks straighten, they push against one another, opening into a star.

# TRICK #2: MAGIC WATER GLASS

**Step 1.** Fill a glass with water. It doesn't matter if it's half or all-the-way full.

**Step 2.** Cover the entire rim of the glass with the cardboard, shiny side up. Press them together.

**Step 3.** Turn the glass upside down while holding onto the cardboard. (**Tip:** Do this over a sink/tub or outside.)

**Step 4.** While the glass is upside down, let go of the cardboard. The water stays inside. *Ta-da!*

**THE SCIENCE:** The key to this trick is **air pressure**. A tiny bit of water escapes when you flip your glass. This causes less negative pressure in the glass than in the surrounding air, which creates mini **vacuum**. The external air pressure presses on the cardboard, holding the water inside.

# TRICK #3: THE INVINCIBLE BAG

**Step 1.** Fill the zip-top bag from this STEMonade kit with water and seal it shut.

**Step 2.** Hold the bag from the top in one hand. With the other, stab the sharp pencil quickly through the bag, through the water, and out the other side. The water stays in the bag!

**Step 3.** If you have other sharp pencils, stab those through the bag, too. The bag is magic. *Ta-da!*

**THE SCIENCE:** The plastic bag is made of **polymers** that stretch and separate just enough to allow the pencil to pass through. Beware! If you wiggle the pencil, there's room for the water to escape.

*rookieparenting.com/toothpick-star-science-experiment/*
*blog.mytoys.de/lernen-mit-spas-experimente-fur-kleine-forscher-der-geniale-glas-trick*
*scienceisforkids.com/cool-pencil-trick-baggie/*